

LOST YOUR TEETH BUT NOT YOUR APPETITE?

TOOTH LOSS AND THE AGING PROCESS

In addition to biological and nonbiological causes that can affect a person at any age, tooth loss is also intimately related to the aging process. Gradual or progressive tooth loss, specifically, is related to an accelerated aging process.

When we lose teeth slowly, over time, is when we have the greatest amount of change in our teeth and in our face. If we lose all of our teeth all at once, we get a rapid initial change in appearance, but it's not as significant as the changes that come with progressive tooth loss. As the body ages, the skin and muscles loosen, resulting in the formation of wrinkles. Over time, the face starts to point inward, giving the appearance of aging. While it may seem strange that the

progressive changes are more significant than immediate changes, we have to remember that it's easy to see immediate change right away. Progressive change is insidious, meaning it's hard to see and we tend to ignore it. Remember those times when you see a photo of yourself from 20 years ago? Who is that guy/girl?

As we lose teeth, especially when we have complete tooth loss due to slow progressive loss, the appearance of the face changes. The line between the nose and lip—the nose-lip groove or nasolabial area—deepens. When that happens, the angle between the nose and the lip becomes wider, more obtuse.



We're genetically predisposed to have a lower jaw that grows to a certain size or a face that develops in a particular fashion. A lot of that appearance is controlled by how the teeth are positioned. We can change the shape of the face by moving teeth or by surgically repositioning teeth or the jaw. Braces and orthodontic appliances allow the teeth to move into better positions that change the way the face looks.

THE FACE OF TOOTH LOSS ISN'T PRETTY

During prolonged tooth loss, the teeth start shifting more toward the roof of the mouth. This can make the lower jaw jut outward and give the “witch’s chin” appearance. It’s the look often given in illustrations of witches: a sunken-in face, prominent lower chin, lines radiating from the lower chin, and missing teeth. That is the complete tooth loss look we’re trying to avoid.



The appearance of a “old witch” is universal, with a long protruding jaw, pointy nose, and missing teeth.

When you get that collapse of structure, you start to lose strength within your facial muscles. This strength, or tonicity, is affected by how much we exercise the facial muscles. When tooth loss causes you to put less force on your facial muscles, you’re exercising them less. When muscles aren’t used, they lose their strength and tonicity. The face has many muscles: the lips, the cheeks, below the chin, the lower jaw, the tongue, and the upper lip. When you lose your teeth, the back muscles in your cheeks and in your jaw lose their tonicity. The lips are affected substantially less; as a result, they begin curling inward and narrowing as the muscles pull tighter. We start to lose the

distinction of the lower lip against the face. Losing the “vermilion border,” as this is called, means that you start to lose that visible lip appearance.



Mother and daughter with similar skin tone and characteristics. Notice some of the changes with age in the lips and tooth display.

Finally, the sunken-in appearance, coupled with the loss of muscle tone, gives the effect of lines radiating from the mouth.

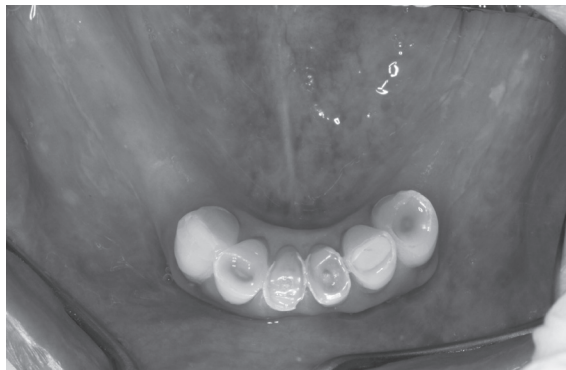
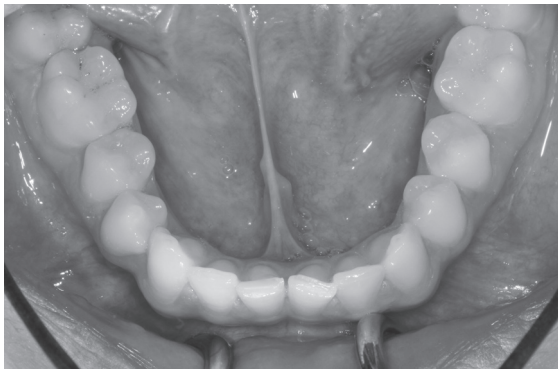


Patient not wearing denture (left) and wearing a denture (middle). When comparing the facial appearance, significant improvement in facial appearance and youthful appearance is achieved with natural dental treatment (right, solid line is without dentures, dotted line with dentures).

BONE LOSS AND LOSS OF FACIAL SUPPORT

Just like the rest of your body, your mouth requires exercise. The mouth can be exercised with speech, but you also need to exercise the jawbone by putting the force of chewing on it.

When you don't have teeth, the underlying bone starts to shrink fairly quickly. The upper and the lower jaws are different; we lose bone faster in the lower jaw. The reason for this is that while the upper jaw is very porous and highly connected with blood vessels, the lower jaw has less blood flow to the bone.



Normal lower jaw appearance (top). Substantial bone loss from missing teeth and tooth wear (bottom).

Bone builds and grows when it is used. What about the opposite? Within three years of losing a tooth in the lower jaw, the bone beneath it can have up to six millimeters of bone loss. Within the first three years of tooth loss in the upper jaw, bone loss can be up to two millimeters. Exercising the jawbone allows for the bone to stay stable or grow. Talking, chewing, and brushing teeth are normal ways to grow the jawbone; this helps to “exercise” the jawbone and muscles contributing to health.

Over the years, you don't really get a lot of bone loss in your upper jaw. In your lower jaw, however, the bone can continue to shrink up to half a millimeter a year. Over the course of 20 to 25 years of missing a tooth, you can have up to nine millimeters of bone shrinkage or even more. For the upper jaw, you can have about three millimeters. When we think about bone loss and the aging process, one promotes the other.

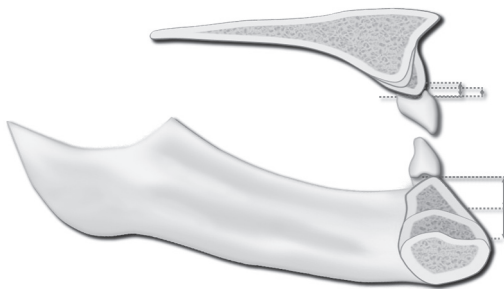


Image depicting the change over the course of 20+ years. Dotted lines represent bone levels compared to where the original tooth position was. Bone loss is significantly greater in the lower jaw than the upper jaw.

As you continue to lose bone, anatomical limitations begin to limit what can be done to replace missing teeth. The best time to intervene is early, when the tooth is about to be lost, or immediately after. If we

intervene 20 to 30 years after tooth loss, we can still provide effective treatment, but your dentist will have to shift the plan significantly to compensate for the advanced bone loss.

When we're little kids, we start to get the first molar, or the "six-year molar," at about age six. This is the third tooth from the back, or the sixth one from the middle of the face, counting backward. Age six is the prime age for brushing your teeth or knowing how to floss, but many that age don't want to bother. As a result, most decay begins here; crowns, implants, and ultimately extractions happen to the first molar. Problems begin there and move backward, then forward. As that back area shrinks, we lose those millimeters of bone. Every millimeter in the mouth is substantial. Biologically speaking, every millimeter in the mouth equals a mile in terms of how important it is.

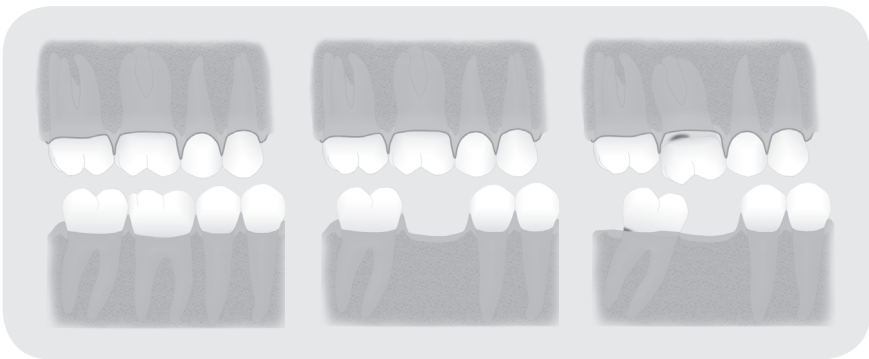
We can arrest bone loss by using dental implants, because when a tooth, or a piece of titanium such as a dental implant, is present within the jawbone, the body reacts to it and says, "I'm going to build more bone here to keep this in place." If we put an implant in early enough after a tooth is lost, the bone stays in place. When a lot of bone has already been lost, we add bone with grafts to provide support for the implants. These procedures require additional surgical steps, increased risk of side effects, and more expense. Early intervention can reduce the bone loss and keep down costs.

As you lose bone progressively, it affects the aging process, so we want to intervene early. Delaying treatment affects our treatment planning, because we have to consider other options.

HOW TOOTH LOSS SPEEDS UP AGING

When you lose just one tooth, initially you don't have any problems. The troublesome tooth is removed, and the mouth heals.

At first, all seems fine, but ultimately the remaining teeth start shifting around, so your bite (the way your teeth fit together when you close your mouth) starts to change. You may start getting decay in areas that are now hard to reach with your toothbrush.



Normal teeth (left); a single tooth is lost (middle), leading to bite shift and decay (right).

When the bite starts shifting, you also start getting pain and having issues with the way your jaw comes together. You tend to start chewing on just one side as you avoid chewing on the area where you have a gap. But chewing more on one side further contributes to the bite problem, causing some jaw discomfort, which then can affect how the muscles work on that side of the face. You might get TMD (temporal-mandibular dysfunction) symptoms, where your jaw joint might start to click or be painful when you open or close your mouth, making it difficult to speak and chew.

That one tooth can cause major problems and send you down a slippery slope. When that happens, problems that arise in one or

two other teeth may start compounding on themselves. When you lose multiple teeth in the back, you start to notice a big change in your bite, in your facial structure, and in the appearance of aging. Let's assume you've gotten to the point where you have only your front six teeth on your upper and lower jaw. Most patients will want to preserve those teeth for aesthetic reasons, to be able to present themselves to the world. They'll ignore the back teeth because of cost, lack of awareness, or fearfulness, and then, all of a sudden, they're left with just twelve teeth, those front six on the upper and lower.

The sides of the cheek start to shrink in, as you don't have the support of the teeth there. If you have a partial denture (removable teeth that click in and out of the mouth and replace just those missing teeth), it probably isn't comfortable. You'll have sore areas in your mouth and will probably wear the partial only when you go out into public. At other times, you'll take them out, because you don't really like wearing them, and you don't like chewing on them. When you don't wear the dentures, you start having not only facial collapse, but you start avoiding social interactions as well.



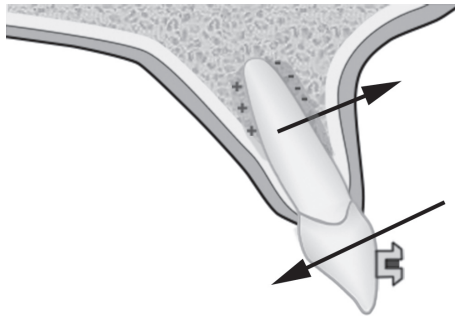
Missing teeth make the face appear much older (left) than with teeth (right).

Just a single missing tooth will compound to multiple missing teeth, ultimately resulting in various other problems associated with missing teeth. The slippery slope will continue unless your dentist intervenes.

WE CAN REVERSE THE AGING PROCESS

When you watch a patient chew without teeth, it looks like a turtle is chewing. The lips curl inward, and you hear them smacking. Chewing takes longer. This appearance embarrasses many individuals who must eat this way and creates a much older facial appearance.

In dentistry, Wolff's Law states that bone models and remodels itself based upon what happens to it. Bone will grow when it is used—under a functional load. Bone will shrink when not used. Typically, greater amounts of bone growth occur under tension; bone shrinks under compression. Orthodontists use this knowledge to place braces on the teeth to move them.



Braces pulling a flared tooth backward results in bone being built on the back side of the tooth and being shrunk on the front side.

With implants, the patient can place functional load on the jawbone by chewing there again. This creates tension around the implant and makes the bone grow.



Bone preservation and growth with implants (left) versus bone disuse shrinkage (right).

The moral of the story is that we can stop the aging process by giving our patients either dentures or implants. We can provide a prosthesis that will give them the facial support to reduce the nasolabial groove (nose-to-lip angle) deepening, change the angles of the face, change the narrowing of the lips, and reduce the sticking-out appearance or prominence of the lower chin. We can renew the tonicity of the face and the lips. We can eliminate or reduce the lines radiating from the mouth.

A dentist can't completely reverse the aging process; he or she can't make you look like you're 20 if you're 75. But we can dramatically take years off a patient's appearance by changing the way a tooth is positioned or the shape of the denture. It has profound effects.



Dental implants and dentures can reverse the aging process and allow dramatic facial changes, giving the appearance of a youthful and fresh look.

1. Tallgren A. The continuing reduction of the residual alveolar ridges in complete denture wearers: a mixed-longitudinal study covering 25 years. J Prosthet Dent. 1972;27:120-32.